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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,875	07/14/2003	Yu-Chun Peng	250809-1030	6833
24504	7590	04/26/2006	EXAMINER	
THOMAS, KAYDEN, HORSTEMEYER & RISLEY, LLP 100 GALLERIA PARKWAY, NW STE 1750 ATLANTA, GA 30339-5948			CHANG, KENT WU	
			ART UNIT	PAPER NUMBER
			2629	

DATE MAILED: 04/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/618,875

Applicant(s)

PENG ET AL.

Examiner

Kent Chang

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– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3 and 5-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2 and 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu (US Patent No. 5,585,792 submitted by applicant in an IDS).

With respect to claim 10, Liu teaches a keypad detecting method using a keypad input circuit (see Figure 3) wherein the keypad input circuit includes a keypad module (keyboard, not shown) which includes at least one key (obviously includes several rows and columns of keys, see Figure 3), and a microcontroller (column 2, lines 16-18).

Liu further teaches outputting a module status data (the occurrence of a key press) from the keypad module (keyboard) when the key is pressed (column 6, lines 23-28), wherein the module status data corresponds to the pressed key while the module status data includes a plurality of key status data.

Liu further teaches parallelly outputting the key status data to the conversion circuit (row and column lines, see Figure 3) and serially outputting the key status data from the conversion circuit (column 4, lines 9-15) to the micro-controller (13,

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column 2, lines 16-18), wherein the controller includes an input/output pin (input/output terminal as shown in Fig.5) and recognizing the pressed key according to the key status data by the micro-controller (scan code, column 2, lines 33-36). Furthermore, the device of Liu includes an output pin (output terminal) for outputting the drive voltage.

With respect to claim 1, Liu teaches a keypad device (keyboard) to be applied in an electrical device (computer systems, column 1, lines 19-22) which comprises a keypad module including at least one key, wherein when at least one key is pressed, the keypad module will output an interrupt signal (23), receives a drive voltage (24 and row inputs), and, according to the drive voltage, outputs a parallel signal corresponding to the key (combination of the row inputs and column output lines).

Liu further teaches a controller (112, encoder), being coupled to the keypad module (see Figure 3), wherein the controller (112, column 7, lines 16-23), receives the interrupt signal (23) and outputs the drive voltage (24) according to the interrupt signal (column 5 line 60 – column 6 line 36) and determines the status of the keypad module (column 2, lines 33-36) according to the signal received.

While Liu does not expressly state the existence of a parallel/serial conversion device coupled to the keypad module for receiving the parallel signal and outputting a serial signal according to the parallel signal, it is inherent that such a device exists as part of the controller (112, encoder). Since the data input into controller is parallel data and the data for the computer (11) is serial (column

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4, lines 9-15), some sort of parallel/serial conversion device must exist as part of the controller (112). Since such a device would inherently exist within the controller (112), the determination of the keypad module status would be accomplished using this serial signal.

With respect to claim 5, Liu teaches a keypad module (key matrix) including at least one key, wherein when the key is pressed, the keypad module (key matrix) will output an interrupt signal (column 6 lines 23-31) and output a module status data (row inputs and column outputs), which include a plurality of key status data and corresponds to the pressed key (column 5, lines 53-63). Liu further teaches a control circuit (112), electrically connected to the keypad module (key matrix) and outputs a drive voltage (column 5, lines 53-63) and a clock signal according to the interrupt signal (column 4, lines 12-15 and 29-30).

Liu inherently teaches the existence of a conversion circuit electrically connected to the keypad module and the control circuit and being used for the receiving of the drive voltage and the clock signal, wherein the conversion circuit receives the key status data in parallel according to the drive voltage and serially outputs the key status data according to the timing of the clock signal. Since the data input into controller is parallel data and the data for the computer (11) is serial (column 4, lines 9-15), some sort of conversion circuit exists as part of the controller (112).

Liu further teaches the conversion circuit would be electrically connected to the keypad module using the row data and column data lines and the control circuit since it is an integral part of the circuit. The conversion circuit receives the

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key status data via the row and column data lines in parallel (see Figure 3) according to the drive voltage and serially outputs the key status data (column 4, lines 9-15) according to the timing of the clock signal (column 4, lines 26-34).

Liu does not expressly state the existence of a recognition circuit, being electrically connected to the conversion circuit, wherein the recognition circuit serially receives the key status data and recognizes the pressed keys according to the key status data.

However, it is inherent that such a recognition circuit does exist as part of the controller (112, encoder). Since the encoder must interpret each event into a standard data format (column 2, lines 33-36), such a recognition circuit must exist as a part of the encoder. As an integral part of the controller, the recognition circuit would be electrically connected to the conversion circuit and as such data would be transmitted to the recognition circuit as it was output from the conversion circuit (serially). It is also inherent the recognition circuit would recognize the pressed key according to key status data, since the key status data is what the conversion circuit converts from parallel to serial.

With respect to claim 2, Liu further teaches the controller comprises an input/output pin (column 5, lines 64-67) which is coupled to the keypad module (see Figure 3).

With respect to claim 6, Liu further teaches the control circuit and the recognition circuit are installed in a micro-controller.

Since all elements taught by Liu and discussed above in the rejection of claim 5 are contained within the encoder, which is a microcontroller, the control circuit and recognition circuit would also be contained therein.

With respect to claim 7, Liu further teaches the interrupt signal is at a low-level voltage (column 6, lines 28-31).

With respect to claim 8, Liu further teaches the drive voltage is at a high-level voltage (column 5, lines 61-63).

With respect to claim 9, Liu further teaches the module status data include 8-bit key status data.

Liu teaches using the standard PS/2 protocol for keyboards (column 4, lines 18-25). This standard protocol uses 8-bits of data to convey the key pressed.

With respect to claims 11 and 12, the device of Liu includes an input pin (input terminal to the controller) so as to transmit signals from the keyboard to the controller.

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Liu (US Patent No. 5,585,792 submitted by applicant in an IDS) as applied to claims 1, and further in view of Griffin (US Patent No. 6,489,950).

With respect to claim 3, Liu teaches all the elements of claim 1 as discussed in the rejection under 35 USC 103.

Liu does not expressly teach the electrical device is a PDA (personal digital assistant).

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In the same field of endeavor (computer input and control devices), Griffin teaches a keypad device (4008) included within a PDA (personal digital assistant, column 1, lines 20-27).

It would have been obvious to one of ordinary skill in the art to combine the PDA with keyboard of Griffin with the keyboard input control system of Liu in order to reduce power consumption so the device can be used longer without being connected to a household electrical current (Liu, column 1, lines 8-18).

### ***Response to Arguments***

Applicant's arguments filed 2/25/06 have been fully considered but they are not persuasive.

In response to applicant's main argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "a device coupled between the encoder 112 and the keyboard matrix to reduce the required number of inputs and outputs of the encoder 112 and reduce the number and resource consumption of the encoder 112, with respect to the keyboard" are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The remainder of the pertinent topics for argument are present in the appropriate rejections above.



***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

**CONTACT INFORMATION**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kent Chang whose telephone number is 571-272-7667. The examiner can normally be reached on Monday to Thursday from 9:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz, can be reached at 571-272-3638.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

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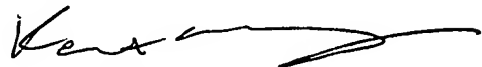
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**or faxed to:**

**571-273-8300**

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Kent Chang  
Primary Examiner  
Art Unit 2629

kc

4/24/06